

REMARKS

Claims 1-32 are pending in the present application. Independent claims 1, 7, 13, 19, and 25 have been amended solely to clarify the claimed invention. In addition, new claims 31 and 32 have been added. No new matter has been added.

Claim 1 as amended is supported in the instant disclosure, for example, at pages 13-15; page 9, lines 8-15; and Figures 2 and 4. Claim 7 as amended is supported in the instant disclosure, for example, at pages 13-15; page 9, lines 8-15; page 17, lines 4-11; and Figure 2. Claim 13 as amended is supported in the instant disclosure, for example, at pages 13-15; page 9, lines 8-15; page 17, lines 12-21; and Figure 2. Claim 19 as amended is supported in the instant disclosure, for example, at pages 13-15; page 9, lines 8 to 15; page 16, lines 14-20; and Figures 2 and 4. Claim 25 as amended is supported in the instant disclosure, for example, at pages 13-15; page 9, lines 8 to 15; page 16, lines 14-20; page 17, lines 12-21; and Figure 2.

New claims 31-32 are supported in the instant disclosure, for example, at pages 13-15; page 9, lines 8-22; and Figures 2 and 4.

Amendment or cancellation of the originally filed claims should in no way be construed as an acquiescence, narrowing, or surrender of any subject matter. The amendments are being made not only to point out with particularity and to claim the present invention, but also to expedite prosecution of the present application. Applicant reserves the option to prosecute the originally filed claims further, or similar ones, in the instant or a subsequent patent application.

Further, silence with regard to any of the Examiner's rejections is not an acquiescence to such rejections. Specifically, silence with regard to Examiner's rejection of a dependent claim, when such claim depends from an independent claim that Applicant considers allowable for reasons provided herein, is not an acquiescence to such rejection of the dependent claim(s), but rather a recognition by Applicant that such previously lodged rejection is moot based on Applicant remarks and/or amendments relative to the independent claim (that Applicant considers allowable) from which the dependent claim(s) depends.

Claims 1-30 stand rejected under 35 U.S.C. 103(a) as unpatentable over Blake ('397) in view of Huang ('312). Applicant asserts that a prima facie case of obviousness has not been established.

Applicant asserts that the cited references fail to teach or suggest all the limitations of the instant claims. Claim 1, as amended, recites a current sensor comprising a polarization transformer comprising “a birefringent fiber ... comprising *a twist* through an angle about the central axis, *said twist* being at *a distance* from the first end of the birefringent fiber” (Emphasis Applicant’s.) Neither Huang or Blake teach or suggest a birefringent fiber with a twist or a distance between a twist and the end of the fiber.

Huang teaches a method for making fiber using length of optical fiber extending up to a few dozens of centimeters long, which is **spun** continuously. Huang, col. 1, lines 35-45; col. 2, lines 2-22. There is no teaching or suggestion in Huang of a fiber with “*a twist* through an angle about the central axis, *said twist* being at *a distance* from the first end of the birefringent fiber” as recited in independent Claim 1. (Emphasis Applicant’s) Nor is there any teaching or suggestion in Huang of choosing a particular angle for the twist, or choosing a particular distance from the twist to the end of a fiber as recited in Claim 1.

Blake teaches only a “quarter wave plate ... constructed from a short section of long beat length polarization maintaining fiber,” set into the beam path via a splice. Blake, col. 3, line 66 - col. 4, line 9. Blake fails to teach or suggest a fiber with a twist, nor a fiber with twist being at a distance from the first end of the fiber.

Independent claims 7 and 13 and the independent method claims 19 and 25 each recite the use of a polarization transformer having “a twist” at “a distance” from the end of the birefringent fiber. Applicant therefore submits that the cited references fail to teach all the limitations of these claims, for at least the same reasons.

Second, there is no suggestion or motivation in the art to combine Blake and Huang to produce the claimed current sensor. There is no suggestion in Blake nor Huang to use a fiber with a “twist through an angle about the central axis, said twist being at a distance from the first end of the birefringent fiber,” for use in a current sensor.

Third, there is no reasonable expectation of success in combining the two references to achieve the claimed current sensor. Because neither Blake nor Huang teaches a “twist through an angle about the central axis, said twist being at a distance from the first end of the birefringent fiber,” as recited in the claims, a person of ordinary skill in the art could not reasonably have expected to construct the claimed current sensor by combining the teachings of these references.

Moreover, Huang teaches that a desired output polarization state may be achieved using Huang's fiber where "linearly polarized light of a definite orientation is injected onto the input end of the invented element *via a half-wave plate*, for example, whose rotation results in a change of the input orientation angle." Huang, col. 2, lines 44-48 (Emphasis Applicant's). In order to obtain a transformer of linear to circular polarization using the teaching of Huang, it is necessary to insert a half-wave plate in the beam path in order to set the polarization. Therefore, a person of ordinary skill in the art would not have reasonably expected to construct the claimed current sensor by combining the teachings of Huang and Blake.

For at least the foregoing reasons, it would not have been obvious to a person of ordinary skill in the art to combine the current sensor of Blake with the polarization transformer (comprising a spun fiber plus a half-wave plate) taught by Huang, to obtain the current sensor of independent claims 1, 7, and 13, nor the methods of independent claims 19 and 25. In addition, because Claims 2-6 and 31-32 depend directly or indirectly from Claim 1, Applicant submits that these claims are unobvious over Blake in view of Huang, for at least the same reasons as those discussed above. Applicant respectfully requests withdrawal of the rejections under 35 U.S.C. § 103.

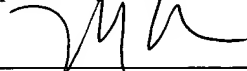
CONCLUSION

In view of the foregoing amendments and remarks, Applicant submits that the pending claims are in condition for allowance. Early and favorable reconsideration is respectfully solicited. The Examiner may address any questions raised by this submission to the undersigned at 617-832-1000. Should an extension of time be required, Applicant hereby petitions for same and request that the extension fee and any other fee required for timely consideration of this application be charged to Deposit Account, No. 06-1448.

Date: June 24, 2003

Customer No: 25181
Patent Group
Foley Hoag LLP
155 Seaport Boulevard
Boston, MA 02210-2600

Respectfully Submitted,



Theresa C. Kavanaugh
Reg. No. 50,356